SLOWDOWN IN THE PENTAGON

(Mr. LAIRD (at the request of Mr. DON H. CLAUSEN) was granted permission to extend his remarks at this point in the RECORD and to include extraneous matter.)

Mr. LAIRD. Mr. Speaker, in the January issue of Foreign Affairs, there is an outstanding article by the well-known author on military affairs, Hanson Baldwin. Very appropriately entitled "Slowdown in the Pentagon," the article clearly and concisely reviews the current state of our defenses and the decisions that led to our present condition. Even more important, it reveals the thinking of those principally charged with the responsibility of those decisions. It quickly becomes apparent that the thinking and dictates of Congress have been largely ignored.

Those of us who sit on the committees responsible for national security have begun our hearings to review new budgets and proposals. I urge all of my colleagues who are concerned directly or indirectly with national security to read the very fine analysis by Hanson Baldwin. Accordingly, I insert the article, "Slowdown in the Pentagon," by Hanson Baldwin, in the RECORD at this point:

SLOWDOWN IN THE PENTAGON

(By Hanson W. Baldwin)

In 1947, the "bible" of the Nation's military contractors—Armed Forces Procurement Regulations—was a slim volume about 100 to 125 pages long. Today, the AFPR, which governs in minute detail all those who do business with the Pentagon, has expanded to four huge volumes totaling something like 1,200 pages, with new ones added daily.

Five to seven years ago, according to a careful statistical average compiled by one major defense contractor, it required 4 to 5 months to execute a contract from the time an acceptable price quotation was received in the Pentagon to the time the contractor received the final document. Today, the same contractor estimates that an average of 9 to 12 months is needed for the same process; a very few may be completed in 30 days; some may require 23 months.

Parkinson's law of bureaucracy—the less there is to do the more people it takes to do it, and the simpler the problem the longer the time required for the solution—appears to be operating in Washington, particularly in defense contracting. There are many reasons for this state of affairs.

Secretary of Defense Robert S. McNamara, the apostle of cost-effectiveness these past 4 years, must share the blame for many of them as well as the credit for some improved management procedures. But the lengthening delays in the development and production of new weapons started long before he took office, and no one man, no one cause, is responsible.

A rough rule of thumb used to hold that it required about 7 years (in the United States) from the gleam in the eye of the designer to the finished operational product. This time span, which has been compared unfavorably with the lead time required for the development and production of new weapons in Russia, has been steadily lengthening, and there is no sign at the moment that the process is being checked.

Even more important, there appears to have been in the first half of the 1960's a definite reduction, as compared to the 1950–60 period, in the evolution and production of new weapons. The Republicans protest too much when they allege that the Pentagon, under Mr. McNamara, has not produced a single new weapons system. But it is at least true that virtually all the major—and most of the minor—weapons systems in operation or in development today (Polaris, Minuteman; B-70, TFX, or F-111; AR-15 rifle, etc.) were already in production, development or in preliminary design and specification form back in the 1950's. The Pentagon in recent years has certainly instituted some much-needed management reforms, effected some economies and added considerably to our ready strategic strength and our conventional war and general support forces. But it has probably canceled more development contracts (the nuclear-powered aircraft Dynasoar; the mobile medium-range ballistic missile Skybolt, etc.) than it has initiated new ones.

Two principal and telling criticisms have been leveled at the Pentagon's present policies, trends and procedures by scientists who can be in no way accused of political parochialism.

Dr. James R. Killian, Jr., chairman of the Corporation of the Massachusetts Institute of Technology, cautioned recently against an attitude that is too prevalent in and outside of the Pentagon—a belief that the technological revolution is over. No one in the Pentagon has ever explicitly stated such a belief, but the attitude of skeptical show-me-ism widely held there acts as a very definite brake upon the excited enthusiasm which should energize new research projects. Mr. McNamara's "whiz kids," complete with slide rules and computers, brushed aside the factor of professional judgment or scientific hunch when they took office and their emphasis upon "perfection on paper" and the cost part of the cost-effectiveness formula has definitely slowed the pace of military development.

Behind this attitude in the Pentagon is an even broader trend. Part of it is a belief expressed by many scientists—notably by Dr. Jerome B. Wiesner and Dr. Herbert F. York in a recent issue of Scientific American—that disarmament, or arms limitation, is the only way to political salvation, and that therefore continued technological military development worsens the situation. This somewhat simplistic viewpoint has had an increasing public and political appeal and indeed has its adherents in the Defense Department. And even so hardheaded a man as Representative MELVIN PRICE, chairman of the Research and Development Subcommittees of the House Armed Services Committee and the Joint Congressional Atomic Energy Committee, recently warned that "we are entering a leveling-off period, a plateau, in the total dimensions" of the Government's research program. This feeling of disillusionment on the part of scientists, and of fear of economic limitations on future breakthroughs in weapons research, comes at a time when the military technological revolution is far from finished.

Despite our present great strength, Dr. Killian has said, we cannot "rest on our oars," thinking the race is won. "We may be only at the beginning of unexampled scientific and engineering achievement," he notes, and the "high confidence" and sheer size of the present research and development effort may "obscure weaknesses still present in our program and lead us once again into complacency."

The second major criticism leveled at present weapons development policies comes from James T. Ramey, Commissioner of the Atomic Energy Commission, and Dr. Edward C. Welsh, acting chairman of the National Aeronautics Space Council. Mr. Ramey in a recent speech urged the Government to rid itself of what he called the requirements merry-go-round. He pointed out that every new project had to be justified on the basis of military requirements, and that many promising developments—particularly in space—could never be pushed, or even demonstrated, if development had to wait for the establishment of requirements. Invention has never followed this path; the machinegun and the tank would still remain blueprint dreams if their development had awaited the specifications of clear-cut military requirements. One cannot state a requirement for an inventor's hopes. As Dr. Welsh has pointed out, "If we had required a clear-cut prior mission, we would probably have developed no airplanes, no spacecraft, or, in fact, no wheel."

Other causes for the delays in development and production of new weapons have their roots in the past, well prior to the present administration, and the responsibility extends far beyond the Pentagon. A $50 billion annual defense budget attracts the eager interests of many government agencies.

The sprawling bureaucracy of big government; the control of major military or paramilitary projects by agencies over which the Defense Department has no direct authority, including the Atomic Energy Commission, the National Aeronautics and Space Administration, the Central Intelligence Agency, the Bureau of the Budget; congressional legislation and executive regulation—social, political and economic; the tremendous size and complexity of the Armed Forces; overcentralization and overregulation in the Pentagon; too much service rivalry and not enough service competition—all these and other factors have become builtin roadblocks in defense development and contracting.

Big government itself is undeniably one of the roadblocks to speedy performance. Everybody must get in on the act, particularly if a new development project involves sizable sums of money or promises numerous jobs, or involves systems or components which must be provided by foreign governments or by other agencies of government.

Development of nuclear weapons and nuclear engines is the responsibility of the AEC, yet the only users are the military, and they develop the devices which carry warheads and the vehicles which use the propulsion systems. Over the years, an effective system of liaison by interchange of officers, by committees and other means has made the AEC quickly responsive to military needs, but the mere process of two-headed control slows and complicates the system.

LASV (low altitude supersonic vehicle) provides an enlightening case history of how many heads produce many purposes, and no final results. LASV was once hailed as a highly promising project. The AEC was to develop a nuclear-powered ramjet engine and the Pentagon would use the engine to power a pilotless atmospheric missile, capable of indefinite flight (perhaps 10 times around the world) at 3 times the speed of sound. The weapon was envisaged as a possible future successor to, or supplement for, ballistic missiles in case the Russians should develop—as they now appear to be doing—an antiballistic missile. In this instance the AEC, after overcoming many technical difficulties in its part of the job, was on the verge of outstanding success and was ready to flight-test the engine, when Mr. McNamara, reversing prior judgments—and as Dr. Edward Teller put it, for "the sake of an economy that amounts to less than 1 percent of the Air Force budget"—canceled the project after a prior investment of nearly $200 million. Dr. Teller was caustic: "I

believe this is the biggest mistake we have made since the years following World War II when we failed to develop the ICBM.

Whether Dr. Teller is correct or not in his assessment of the importance of such a weapon, the fate of LASV is illustrative both of prevalent negativistic Pentagon philosophy about new weapons systems and of the difficulties of developing new systems under hydra-headed controls.

The creation of the National Aeronautics and Space Administration has provided another type of problem. NASA stemmed from the same kind of political philosophy that nurtured the AEC. Atom bombs were too powerful to allow the generals to play with them; ergo, a civilian agency must control nuclear power—and it must be channeled away from nasty military purposes. The same scientific-political pressure groups that advocated this concept helped (with President Eisenhower's approval to establish NASA, again on the theory that space efforts must be controlled by civilians and that space must not be used for military purposes. The pragmatic absurdities of this point of view are now self-evident; nuclear power so far has been more important in the military weapons and military propulsion field than in any other way, and the most important applications of space technology have been military—reconnaissance satellites, weather satellites, missile-warning and navigational satellites.

But in the case of NASA, the problem has been compounded. For while the AEC is essentially a research and production agency, NASA is an operating agency as well. From a small highly efficient aeronautical research agency, it has now expanded into a gargantuan multibillion-dollar empire, with tentacles all over the country, managing the biggest program on which the United States has ever embarked—to place a man on the moon.

In its early years, NASA was sluggishly if at all responsive to military needs, and the Pentagon itself was inhibited from any effective space developments (though, curiously, the only effective space boosters available were military ballistic missiles). Gradually the liaison, due to Dr. Welsh and others, has been greatly improved. Numerous military officers, active and retired, now hold some of the most important positions in NASA, and, in addition the Armed Forces have furnished most of the astronauts and by far the most important part of the facilities and services used by the agency. The two-headed control still offers difficulties, but today the main stumbling blocks to the rapid development of military space projects are Secretary McNamara and his Director of Defense Research and Engineering, Dr. Harold Brown, who in his new political role in the Pentagon has become a remarkably unadventurous scientist.

Often the President's Scientific Adviser, whose contacts with Pentagon and other Government scientists cut squarely across organizational lines, has also acted as a roadblock to new developments. He exercises tremendous power without either specific responsibility or specific authority; therefore, his intervention often not only delays but confuses. The Adviser's great power stems largely from his White House status; unfortunately around him has grown up a small but important office manned by men more impressive as bureaucrats than as scientists, who represent, in effect, another echelon of delay. The old bogey of "no military requirements" has been invoked again and again by the Defense Department, with tacit support of scientists outside the Department, to stifle projects aborning particularly in the military space field.

The Central Intelligence Agency is another organization which has gradually usurped some of what were once primarily military functions. Two factors—the creation of the Agency and its tremendous increase in power, and the creation by Mr. McNamara of a Defense Intelligence Agency outside and above the service chain of command, and directly responsive to him—have greatly reduced the importance of the now emasculated service intelligence agencies—G-2, A-2, and the Office of Naval Intelligence. The service chiefs no longer sit as members of the U.S. Intelligence Board, the governing policymaking organ of the defense community. In operations as well as in procurement the results is still another proliferation of agencies and committees. The fiasco of the Bay of Pigs—a military operation run principally by the CIA instead of by the Pentagon—is one example of the kind of problems this expansion of the executive department can produce. And until recently the CIA—not the Army—was operating the Army's own special forces counterinsurgency troops in South Vietnam.

The new centralized organization of intelligence can also affect weapons procurement, for military requirements must be measured in part against Soviet capabilities; if the centralized control of intelligence reduces those capabilities, obviously force levels and weapons requirements are altered. This is not an imaginary problem. For instance, the strength and speed of mobilization of the Soviet Army has been sharply reduced, in the Pentagon's intelligence estimates, during the McNamara administration.

The Bureau of the Budget with its pervasive influence over the source of all power—the dollar—has now developed military "experts" who literally can doom a weapons system or foster its growth. Even Congress' watchdog—the Comptroller General—has become his own "expert" on tactics and military supply.

Thus the "advice"—and the actual control—exercised on military projects by executive agencies outside the Pentagon is sweeping but almost completely negative. They delay, and they criticize and they inhibit; they do not expedite.

Congressional legislation and executive regulation complicate, restrict and delay research and procurement contracts. The contractor must comply with hundreds of laws or executive orders. Accounting procedures, minimum wages, civil rights, veterans' preferences, subcontracting, profit limitations and so on and so forth, all are roadblocks to speed. The Armed Forces procurement regulations reflects in its bulk, size and complexity how social, political and economic considerations, as well as those that are military and technical, influence the awards of contracts.[1]

Economic considerations—the need, for instance, to funnel defense contracts into depressed areas—and political pressure—the need to win an election or placate a pressure group—play their part in consideration and delay in contracts. Normally, as the TFX investigation brought out, no major defense contract is awarded without Presidential approval, and the Democratic (or as the case may be, the Republican) National Committee representatives always have their opportunity to urge contractual rewards to the party faithful. The F-111 (TFX) contract went to the General Dynamics Fort Worth plant, although the services in three separate evaluations preferred the Boeing proposal. Many in Washington believe this was the result of political pressure.

All of these practices—all of this red-tape—"jest growed" as part of big Government and a big defense budget.

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But the major causes of recent delays are to be found in the Pentagon itself, and they stem from the overcentralized organization established by Mr. McNamara and the attempts made to achieve perfection on paper before any steel is bent.

Centralization—"unification," the public calls it—has been steadily increasing, particularly since the passage of the 1958 modifications to the National Security Act. But Mr. McNamara has used the power every Secretary of Defense has always had to a far greater extent than any predecessor. There is no doubt that he has run the show. Any major contract must be approved by him; even relatively minor modifications must pass the gauntlet of his numerous assistants.

The checkreins Secretary McNamara has used were, without doubt, needed to halt the proliferation of unneeded weapons systems and the expenditure of billions on projects that turned out to be "duds" or duplications of others.

It is an axiom of sound military research practices that in the early stages two or more parallel lines of development should be followed leading to the same end—a weapons system of given characteristics. In case an unexpected engineering problem of insuperable difficulty is encountered in one developmental effort, the second may offer an alternative. But to avoid unnecessary duplication and expense once the teething troubles are over one of the two lines should be abandoned and full efforts concentrated on the more hopeful one. In the pre-McNamara era this decision was often left until too late. This was the case, for instance, when the Air Force developed the Thor intermediate-range ballistic missile and the Army developed Jupiter. Because of service rivalries and pressures, both missiles were developed to final "hardware" stage and both were produced in small but expensive quantities, although one virtually duplicated the other and either could have done the job of both. Mr. McNamara, therefore, had some justification for his show-me attitude and for the elaborate system he has established of evaluating and analyzing all new projects. But he or "the system" has overcompensated. The cost part of the cost-effectiveness formula has been emphasized and underscored at the expense of speedy development and new ideas. Never in the history of competition have so many been able to say no, so few to say yes.[2]

In the past, technological development and research and procurement contracting were largely decentralized; the individual services were responsible to a major degree for their own weapons development. Service compe-

[1] AFPR regulations require the proposals of the contractor to be reviewed before submission by engineering, pricing, auditing, data, legal, civil rights, subcontracting and many other experts, and in turn various Pentagon and government agencies must review the proposals for compliance. Even so, AFPR regulations are sometimes vaguely worded. A Congressional investigating subcommittee recently requested the Department of Defense to alter those regulations dealing with employee health and recreation expenses. The wording of some of the regulations permitted the charge-off of losses for operating factory cafeterias, and contractors could also charge cocktail parties to the taxpayer if they were billed as "employee welfare."

[2] Management experts and contractors have pointed out that the exercise of centralized control by the Department of Defense over the services requires information and reports from the services. The self-generating and self-defeating nature of the workload imposed becomes apparent. The tighter and more centralized the control, the more reports that are required. The more authority taken away from the working level, the more paperwork that is required from those at the working level to back up their diminished authority.

tition, in the happiest sense, produced the air-cooled aircraft engine (sponsored by the Navy) and the liquid-cooled engine (sponsored by the then Army Air Corps) with which the United States fought and won World War II in the air. One without the other would have been incomplete; service competition produced both.

When a new aircraft was required, the service needing it determined the characteristics wanted to perform the specialized missions contemplated. Competitive contracts were then let for a small number of planes, and actual flight competitions between competing companies were held, with the big payoff production contract going to the contractor who built the best plane, as actually determined in the air.

The services formerly had, within overall policy and budget limitations, a considerable degree of autonomy, and weapons development and procurement were largely decentralized. What can be done when redtape is cut, authority and responsibility are coupled, and organization is decentralized to the working levels is shown by the production of the Polaris missile and the A–11 aircraft. The highly successful and extremely complex Polaris was pushed to completion as an operational weapon in about 3½ years, well ahead of schedule. One man, Vice Adm. W. F. Raborn, was given authority and responsibility to cut across organizational lines, and he was fully backed by the Navy and the Department of Defense. There was then no such centralization in the Pentagon as exists now. The A–11, successor to the famed U–2 high flying reconnaissance plane, was a secret project, amply funded by the CIA and by the Air Force. With ample funds, full authority and responsibility, and a high degree of autonomy, Lockheed Aircraft was twice able to produce—in the U–2 and its successor—world-beating aircraft in an abbreviated time span. Similarly, Vice Adm. Hyman G. Rickover, who wore two hats—one Navy, one AEC—and whose authority therefore spanned the bifurcated organizational structure, was able to produce what was essentially a new weapons system with minimum delay. The key to these and other successful development and production efforts is the coupling of authority and responsibility at working levels.

Today the entire picture has changed violently. Under the law, separate service departments must be maintained and the services cannot be directly merged; Mr. McNamara has merged them indirectly, as John C. Ries points out in his new book.[3] A fourth service—the Office of the Secretary of Defense—has been built up as an all-powerful apex. It is far more than a policymaking and coordinating agency, as it was originally intended to be under the National Security Act of 1947; it administers, operates, contracts, develops, procures, and commands. Superagencies, superimposed over the service departments, are answerable only to the Secretary of Defense and the Joint Chiefs of Staff.

Former service functions have been assumed by the Defense Supply Agency, which procures items common to the services; by the Defense Intelligence Agency, the National Security Agency (communications, intelligence, and security; codes and ciphers, etc.), the Defense Communications Agency (common and long-lines communications) and the Defense Atomic Support Agency. These have added new superechelons to the Pentagon bureaucracy.

Mr. McNamara came into office intending—he let it be known—to streamline top echelon Defense Department management. There were some 15 Presidential appointees of the rank of Assistant Secretary of Defense or higher in January 1961 when he took office; there are 16 today. There were 11 Deputy Assistant Secretaries of Defense 2 years ago; there are about 30 today.

The Joint Staff of the Joint Chiefs of Staff was originaly limited by law by Congress to 100 officers, then increased to 400, a specific limit intended to prevent the development of a super-General Staff; it now numbers the full 400, plus another 1,170 military and civilian personnel. The additional personnel are labeled members of the Organization of the Joint Chiefs of Staff, a euphemism which permits evasion of the legal restriction (with both executive department and Congress winking at the extra-legality). This staff, rich with rank, now has three lieutenant generals or vice admirals assigned to head its more important sections or divisions, and its director—a three-star general—may be given four stars if current suggestions are carried out.

As one would expect with a gigantic staff which tends to generate its own paperwork, the workload of the Joint Chiefs of Staff steadily increases—from 887 papers or reports requiring some action by the JCS in 1958 to about double that number today. Something like a de facto hierarchical general staff now exists, with the Chairman of the Joint Chiefs as a kind of overall Chief of Staff; and it busies itself with the ridiculous and the petty as well as the crucial and important. (The Joint Chiefs, for instance, determine the details of the administration and curriculum of the National War College and other joint service schools and have even solemnly considered such important matters as the advisability of establishing an all-service soccer team which might compete with European all stars, and the numbers of cooks, and which services should furnish them, for a U.S. headquarters in Europe.) Representative CHARLES S. GUBSER, of California, has estimated that there are now a total of some 34,000 employees responsible to the Office of the Secretary of Defense (exclusive of separate service departments in Washington). Statistics like these indicate the revolutionary changes that have occurred within the Pentagon in the past 15, particularly in the past 4, years. As Mr. Ries puts it, the dogma of centralization has triumphed.

Many beside Mr. Ries worry about the capability of the present defense organization to withstand the strain of real war or protracted crises. There have been some disturbing signs of faltering and confusion during the Berlin crisis, the Cuban missile crisis, and one of the Gulf of Tonkin incidents.

The present Secretary of Defense has a computer mind, capable of absorbing and recording immense quantities of detailed data. He also has ferocious energy. The combination of these two qualities has enabled him, so far, to deal with what Mr. Ries calls the minutiæ that floods upward in a centralized organization. But even Mr. McNamara has several times given evidence of strain, and after Mr. McNamara, who? To decentralize the Department so that the Secretary could have time, opportunity, and assistance to cope with major decisions would require a decrease rather than an increase in the staff of the Secretary, something that no democratic bureaucracy seems capable of accomplishing.

The centralized organization of the Pentagon and the accompanying growth of a bureaucracy—particularly in the upper echelons—explain in part the delays in development and procurement fo new weapons systems. In effect, responsibility and authority have been separated in the Pentagon. Vice Admiral Rickover gave several instances of delays caused by bureaucracy in testimony to a Senate committee in 1958. Purchase of nuclear cores was delayed for 6 months "just because one staff person with no responsibility but with authority had on his own decided" against the purchase. In March 1964, he testified before a House Appropriations Subcommittee on the question of nuclear power for a new aircraft carrier. The carrier itself was already approved by both Congress and the Defense Department. The Navy and most Congressmen felt that such a major new investment should be as modern as possible, and that it should be powered with nuclear reactors rather than with oil, even though the initial cost would be considerably greater. But the subject was studied to death. Admiral Rickover testified: "The Department of Defense itself caused much of the delay. They considered the Navy's request to change it to a nuclear carrier for a year. The Department of Defense kept on asking for more information, more studies, more analyses. New studies and analyses are underway now on nuclear propulsion for the next carrier and other surface ships. These studies never end, and we don't build ships."

The services still have the legal responsibility for development and procurement but not the authority to implement their responsibility. Similarly the responsibility for planning and execution has been separated. The Joint Chiefs no longer legally command anything; in the procurement field the services must often execute or carry out procurement plans they have not formulated (i.e. the TFX).

In an admirable attempt to promote some much-needed long-range planning in the Armed Forces and to control costs, Mr. McNamara instituted what is called the 5-year force structure and financial management program, often dubbed "the book." "The book" tries to chart and elaborate all major details of service force structures (including sizes, types) and weapons systems required, being procured or developed, for the next 5 years. Any significant change in "the book," including research expenditures, requires consideration by hundreds of people, including the Joint Chiefs of Staff and the Secretary himself, and an elaborate process of justification, review, and approval all along the line from lowest to highest echelons. Contracting, budgeting, progress on weapons systems—and even lawn cutting—are programed and controlled in detail from various echelons of the Secretary's office, with streams of reports required. The services have complained that there is an inherent, built-in inflexibility and rigidity in this system.

In addition to the Secretary of Defense and his deputy and the Chairman of the Joint Chiefs and the 1,570 supporting staff, all of the Assistant Secretaries of Defense have become, not de jure, but de facto, line operators as well as staff assistants. By virtue of authority delegated by the Secretary, they can and do cut across service lines and intervene at the lowest echelons. Two offices, in particular, have a major influence in weapons development and procurement; unfortunately they are to often delaying factors rather than expediters.

The Office of the Assistant Secretary of Defense (Controller) has completely changed its character under the McNamara regime. Charles J. Hitch, the incumbent, has, with the Secretary's approval, applied the methods he developed as an economic theorist at the Rand Corp. to military strategic programing. The cost effectiveness of various weapons systems is analyzed on paper by his office, and he and his associates have a powerful voice in determining what kind of weapon will do to what service. Dr. Brown, the Director of Defense Research and Engineering, does another analytical job, supposedly from the technical and engineering feasibility point of view. His analyses are particularly important in the research and development stages.

Any projected weapons system has to run

[3] "The Management of Defense." Baltimore: the Johns Hopkins University Press, 1964.

the gauntlet between the Charybdis of Mr. Ilitch and the Scylla of Dr. Brown; but many other high and low echelon perils confront it also. The McNamara administration has established "for all large endeavors" (and for some that are not so large) what it calls a Project Definition Phase (PDP in Pentagon jargon). In Secretary McNamara's words, "before full-scale development is initiated, the specific operational requirements and the cost effectiveness of the system must be confirmed, and goals, milestones, and time schedules must be established. * * * All the aspects of a development are tied together into a single plan which defines, for Government and industry alike, what is wanted, how it is to be designed and built, how it will be used, what it will cost, and what systems and techniques will be used to manage the program. * * *"

The PDP represents the Pentagon's search for "perfection on paper" before any operation begins. There is no doubt that it is an attractive theoretical management tool, but here is also not much doubt that it has delayed development and procurement of new weapons systems, and whether or not the end result in the form of "finished hardware" is actually any better or less expensive, it is still too soon to tell.[4] The TFX (F–111) aircraft for the Air Force and Navy has been programed and evaluated, analyzed, and costed in detail on paper in the "PDP"; it is still in the development stage and may not be operational for years to come.[5] This plane, which can vary the sweep of its wings (their angle to the fuselage) in flight, was forced into a preconceived and theoretical mold in the PD phase. Mr. McNamara insisted, against service objections, that Navy needs and Air Force needs could be satisfied by a single all-purpose plane, which could be flown from land fields and carrier decks on several entirely different types of missions. The attempt to achieve this—in theory and in blueprint form—required many months before designs acceptable to both services were evolved. The development contract was finally awarded to Convair and the first of the developmental TFX planes is nearing completion. The Navy fears the finished version may be too heavy for carrier decks.

The finest fighter in the world today, the Navy's McDonnell F–4B Phantom II, which the Air Force is now buying in quantity in a slightly modified version, was the product of flight competition back in the fifties when the PDP in its present rigid form was unheard of, and centralization in the Pentagon had not reached today's extreme. The McDonnell and Chance-Vought aircraft companies, in response to a Navy need for a supersonic fighter of certain given specifications, were each awarded developmental contracts for a small number of planes. The results were then actually flight-tested in competition. McDonnell won, but the Chance-Vought product was also good and was procured in more limited quantities for specialized reconnaissance and other missions for the fleet.

Many believe that this type of flight and interservice competition produces the best dividends. One service evolves the plane or engine and (after actual competition between several bidders) contracts for and procures the one best suited to its own specialized needs. That one may well be adapted—after it is operational—to the needs of another service.[6] Each gets the type it wants, and a better plane or weapon than if it had been forced, on paper, into a common mold. For there frequently are incompatible requirements between service weapons systems, and the attempt to provide "commonality" in the interest of reducing costs may well increase cost and reduce combat effectiveness.

It is true, of course, that major weapons development projects have become far more complex and costly than they were 10 to 20 years ago. In theory, the attempt of the Department of Defense to define a project and to refine it on paper before the steel is bent has a great deal of attractiveness. Many authorities who are loud in condemning the delays of the PDP system do not believe it is economically feasible—at least in all cases—to return to the old era of actual competitive service tests. Others, however, think that competitive testing of several different models, while more expensive initially, may actually save money eventually, chiefly because it may result in a better product. Eugene E. Wilson, retired naval officer and retired vice chairman of United Aircraft Corp., wrote in the September-October 1964 issue of Shipmate, the magazine of the U.S. Naval Academy Alumni Association, that "the current practice of awarding production (and development) contracts to a single supplier, on the basis of contract guarantees unsubstantiated by competitive prototype performance * * * will not protect a hapless purchaser (the Government) willing to risk his all on computation." The fundamental difficulty with PDP is that it has been invoked as an answer to all development and production problems, that it is interpreted too rigidly, and that there has been far too much dependence in the Department of Defense on what is essentially a management tool at the expense of judgment and engineering and scientific intuition.

It is only fair to add that recently the complaints of the services and of industry have resulted in a recognition in the Defense Department of some of these faults. A new and standardized procedure for rating, evaluating and selecting the winning contractors in a screening competition has been under preparation for 2 years and is now being presented—possibly for final approval—to the Office of the Secretary of Defense. For any large projects (exceeding $100 million in production costs) authority will still remain at the highest levels; for smaller projects authority may be delegated to lower echelons. The procedure may—but probably will not—lessen the timelag; certainly it will not change the recent emphasis on "perfection on paper."

In the program definition phase of weapons development three high hurdles, in addition to countless evaluation procedures, cause many projects to stumble and fail.

One is the eruption of interservice rivalry instead of—in the best sense—interservice competition. A proposal for a new weapon or aircraft by one service is now picked to pieces and studied on paper by all services before even a minor development contract is approved. Now that their former degree of autonomy is restricted and actual development competition discouraged, the services know that the PD phase offers a now-or-never chance. Each service may produce a different concept or a different set of desired performance figures; a long hassle ensues to try to put them all into one weapons system. This occurred, notably, in the case of the TFX; it is happening now with the new Coin (counter-insurgency) aircraft which the Marines want to develop. The result is delay, sometimes a compromise as to performance.

A second factor causing delay and difficulties is the attempt by the Secretary's numerous assistants to eliminate what they call goldplating, or unnecessarily high performance figures or standards. The attempt is laudable, but it is sometimes carried to extremes, and it has been difficult, as Adm. George W. Anderson, former Chief of Naval Operations, pointed out, for men in uniform to adjust to the idea that a 10-mile-an-hour speed differential between our own aircraft and enemy planes may not—in the eyes of the Department of Defense—be important. To a pilot, that 10 miles an hour, even though costly in terms of dollars, may be the difference between life and death.

It is in the PD phase, too, that the old bogey of "no operational or military requirement" becomes a major obstacle to weapons development. It is invoked at both high and low levels. Mr. McNamara has been rigid—though with some signs of a slight relaxation recently—about the statement of specific needs before development can start. The "operational requirement," as an experienced naval officer puts it, "is another of the paper obstacles which are intended to insure proper planning but which, when operated by people who have no real knowledge of the problems involved, frustrate progress."

In the military exploitation of a new medium, like space, it is completely impossible to define, in the terms required by the PDP evaluations, the need for, or the performance characteristics of, a new vehicle. How can even a prescient scientist predict what usefulness a manned orbiting laboratory will have? Yet the invocation of "no specific operational requirement" has delayed Air Force development of this highly important new project for at least 2 to 3 years.

Representative CHET HOLIFIELD'S Military Operations Subcommittee of the House recently gave its view of what's wrong with the Pentagon. After a thorough study of Mr. McNamara's protracted efforts to merge military and commercial satellite systems, the subcommittee reported that 2 years had been wasted. It said: "We still detect uncertainty and overeconomizing in the Defense Department approach * * * there has

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[4] Stanley Bernstein, of the Raytheon Co., in a paper "The Impact of Project Definition on Aerospace System Management," delivered at the first annual meeting of the American Institute of Aeronautics and Astronautics (June 29–July 2, 1964), used the mobile medium-range ballistic missile as a case history. He pointed out that contractors were expected to meet some 20 different requirements in a final PDP report, "one may consider the several contractors who participated in the MMRBM effort," he said. "Even prior to Department of Defense program authorization in January 1962, companies like Hughes, Thiokol, Martin, and many others had been engaged in significant engineering efforts. When program definition was authorized, originally as a 4-month effort, nine prime companies and many subcontractors and suppliers geared for maximum effort. The 4 months stretched to almost 1 year. Motivation has to be maintained. The present status of MMRBM is clouded. [Since this paper, MMRBM has been virtually killed.] Yet the participants must retain a level of interest in order to be ready to proceed if the program should become active. The maintenance of this motivation is a major management challenge. The requirement for stated performance incentive goals will, inevitably, lead to more conservative design and engineering during the program definition phase. * * * PD contracts should not be used as a means of postponing difficult government decisions or to decide what kind of military capability is required."

[5] The practice of "superstudy" is extending beyond the Pentagon. The SST, or supersonic commercial transport, is now called the super-studied transport. Najeeb E. Halaby, head of the Federal Aviation Agency, recently said that "whether or not it ever flies, it will easily be the most analyzed project in the Government's history." If so, this is quite a record.

[6] There are countless instances of this kind of adaptation. In addition to the liquid- and air-cooled engines and the F–4B, the Air Force, for instance, uses the Navy-developed Sidewinder and Bullpup missiles.

been overmanagement and underperformance * * * too many layers of supervision, the lack of clear-cut responsibility * * * and sluggish channels of * * * communication."

Senator JOHN STENNIS, in common with many others, has decried the tendency to be negative, to object, to try to refine requirements in too much detail, to evaluate and study too much. Some weapons systems, he has said, "have literally been studied to death." He cites the B-70 (which dates back in inception to 1954) as a prime example of what happens to a weapons system development "when it is subjected to repeated stops and starts and when there is not a strong, orderly and continuous program to bring it to completion." This bomber, designed for long-range, high-altitude flights at three times the speed of sound, has encountered many technical difficulties and is well behind even a revised schedule. This was made certain by off-again-on-again programs in the Pentagon and by the multilayered, centralized organization there.

Before a final contract for a project is signed and actual development starts, an average of at least 50 signatures or approvals is required—sometimes as many as 100 to 200. Some individuals, required by legal or administrative reasons to sign twice, have had to be briefed twice; by the time the second signature was needed they had forgotten what the contract was about.

It is true that centralization in the development and procurement field, epitomized by the 5-year force structure and the program definition phase, was in part the outgrowth of inadequate management by the services of some research and development contracts. It was also the result of the failure of past Secretaries of Defense to exercise the power they have always had by eliminating—not service competition—but duplicatory and unnecessary service rivalry. But the cure has proved worse than the disease.

Healthy service competition can be encouraged and unhealthy service rivalry can be discouraged by—

1. Abandonment of attempts—keyed primarily to costs, not effectiveness—to force service weapons systems into "all-purpose" molds. "Commonality" develops naturally from actual technological accomplishments, not from "PDP's" or paper plans.

2. Return, insofar as possible, to competition in hardware rather than competition on paper. The end product is almost certain to be better, and ultimately may cost less.

3. Sponsorship, within a service, or by two or more services, of competitive research and development projects, all having a common goal, but each following different technological paths to that goal.

4. Definite selection by the Defense Department at the earliest possible stage of the best project; cancellation of the others.

The key lessons for tomorrow are two. Responsibility and authority must be coupled at working levels in the management of research and development and production contracts. And there must be a much higher degree of job stability and continuity in management than the rotational policies of the services have made possible in the past.[1]

III

Mr. Ries, whose studious book on defense organization cannot be accused of service or political partisanship, quotes Ernest Dale as writing in the American Economic Review for May 1961: "The greatest single bane of management today is its growing absolutism, its refusal to discuss or listen to different opinions." Mr. Ries declares that "fantastic though it may seem, defense reformers have succeeded in turning the calendar back 60 years."

Whether one agrees with this strong statement or not, there can be no basic disagreement with the testimony given to the Senate Armed Services Committee in 1949 by Ferdinand Eberstadt, one of the most perceptive students of defense organization. He said: "From shattered illusions that mere passage of a unification act would produce a military utopia, there has sprung an equally illusory belief that present shortcomings will immediately disappear if only more and more authority is conferred on the Secretary of Defense, and more and more people added to his staff. * * * I suggest that great care be exercised lest the Office of Secretary of Defense, instead of being a small and efficient unit which determines the policies of the Military Establishment and controls and directs the departments, feeding on its own growth, becomes a separate empire."

Today the separate empire exists. Parkinson's law must be reversed if the Pentagon is to stop "feeding on its own growth" and if ideas, weapons development and imaginative policies are to be encouraged.

[1] As Representative MELVIN PRICE notes, one reason, for example, that the Army (nuclear) reactor program (a program for developing a small portable nuclear reactor which could provide power in remote areas) has fallen flat on its face is that the Army kept transferring out the managers of the program. There were six different managers in 5 years.